

A NEW SUBSPECIES OF *CROTALUS DURISSUS* (SERPENTES: CROTALIDAE) FROM THE RUPUNUNISAVANNA OF SOUTHWESTERN GUYANA

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ABSTRACT: A new subspecies of *Crotalus durissus* is described from the Rupununi Savanna of southwestern Guyana. It is distinguished from all other subspecies of *Crotalus durissus* by the presence of a definite triangular light mark on each of the supraoculars, and in having the body diamonds edged with white tipped scales. Its possible taxonomic status as a full species is discussed.

UNITERMS: *Crotalus durissus trigonicus* subsp. nov. (*); *Crotalus durissus cumanensis* Humboldt and Bonpland; *Crotalus durissus cascavella* Wagler; *Crotalus durissus terrificus* (Laurenti); *Crotalus durissus marajoensis* Hoge; *Crotalus durissus ruruina* Hoge (*); *Crotalus uticolor* Van Lidth de Jeude *Crotalus durissus collilineatus* Amaral; *Crotalus durissus dryinus* (Linnaeus) (*).

INTRODUCTION

Allen and Neil (1957) were first to point out the existence of an apparently undescribed *Crotalus durissus* inhabiting the Rupununi Savanna in southwestern British Guiana (= Guyana). They pointed out that both Gloyd (1940) and Klauber (1941, 1956) felt there were probably some undescribed subspecies of *Crotalus durissus* in South America, but that a taxonomic appraisal must await additional material. Klauber (1956) suggested that at least three subspecies of *Crotalus durissus* would probably eventually be recognized from South America, *C. d. cumanensis* Humboldt in the north (Venezuela and Colombia), *C. d. cascavella* Wagler, in the Brazilian "bulge" and *C. d. terrificus* (Laurenti) in the south (southeastern Brazil, Paraguay, Uruguay, northern Argentina and Bolivia and extreme eastern Peru). Vellard (1938, 1943), Gonçalves (1954), Gonçalves and Viera (1950, 1956) and Schenberg's (1959a 1959b) studies on venom gave clues to still another subspecies of *C. durissus* occurring in Brazil. Hoge (1966),

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in his "Preliminary Account on Neotropical Crotalinae (*Serpentes Viperidae*)", divided the rattlesnakes of South America into eight subspecies. He resurrected four from the synonymy of *Crotalus d. terrificus* (two that Klauber, 1956, had predicted) and described two others, *C. d. marajoensis* and *C. d. ruruima*. He recognized *C. unicolor* as a subspecies of *C. durissus*, apparently following Brongersma (1940). Harris and Simmons (1972a), since that time have elevated *C. unicolor* to specific status.

Klauber (1972) in his revised edition of the "Rattlesnakes" did not apparently understand Hoge's (1966) work, and did not recognize his revision of the South American *C. durissus*. He did, however, list the separation given by Hoge (1966) in a footnote. Harris and Simmons (1972a) presented "A checklist of the rattlesnakes (*Crotalus durissus* group) of South America" recognizing the division of this group as proposed by Hoge (1966), and presented a map giving the distribution of the South American representatives of the *Crotalus durissus* group. Harris and Simmons (1972b) also presented identification keys for this group which were adapted from Peters and Orejas-Mirando (1970). Harris and Simmons (1976) presented "A preliminary account of the rattlesnakes" and continue to recognize Hoge's (1966) separation, although they point out the existence of a new subspecies in southwestern Guyana, specifically the one pointed out by Allen and Neill (1957).

CROTALUS DURISSUS TRIGONICUS SUBSP. NOV.
RUPUNUNI SAVANNA RATTLESNAKE

1972. *Crotalus durissus terrificus* Klauber, Rattlesnakes, vol. 1, p. 35.

Holotype. — No. RS907HSH/RSS in the authors' collection at the Natural History Society of Maryland, an adult female collected in December 1970, in the Rupununi Savanna of southwestern Guyana (Figure 1).

Paratypes. — Four specimens from the type locality, collected at the McTurk Homestead on the Rupununi River, about 3 mi E Karanambu, British Guiana (=Guyana) during September 1952 and catalogued UF 16157, 16159-16161 in the collection of the Florida State Museum, University of Florida.

Range. — Known at present only from the type locality: the isolated Rupununi Savannas of southwestern Guyana. Probably also occurs in the adjacent savannas of the state of Roraima, Brazil.

Diagnostic Characters. — A dwarfed subspecies of *Crotalus durissus* intermediate in pattern between *C. d. ruruima* and *C. d. dryinus*. It has a definite triangular light mark (V shaped) on the supraoculars with the apex towards the center of the head (Figure 2). The body is boldly patterned with white — tipped scales bordering the diamonds. The centers of the diamonds are ground color bordered with deep brown to black, then bordered on the outside by the white — tipped scales.

Description of the Holotype. — An adult female. Total length 1157 mm; tail length 82 mm; ratio of tail to total length 0.071. The head length is 5.02 cm and is contained in the total length 23 times. The body is stout and the vertebral ridge conspicuous.



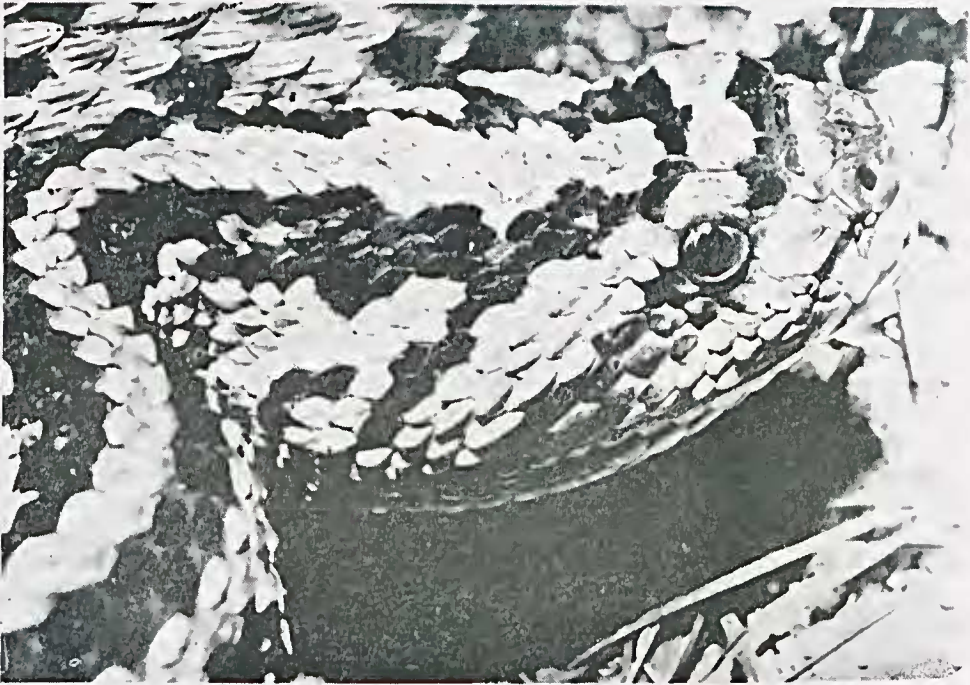
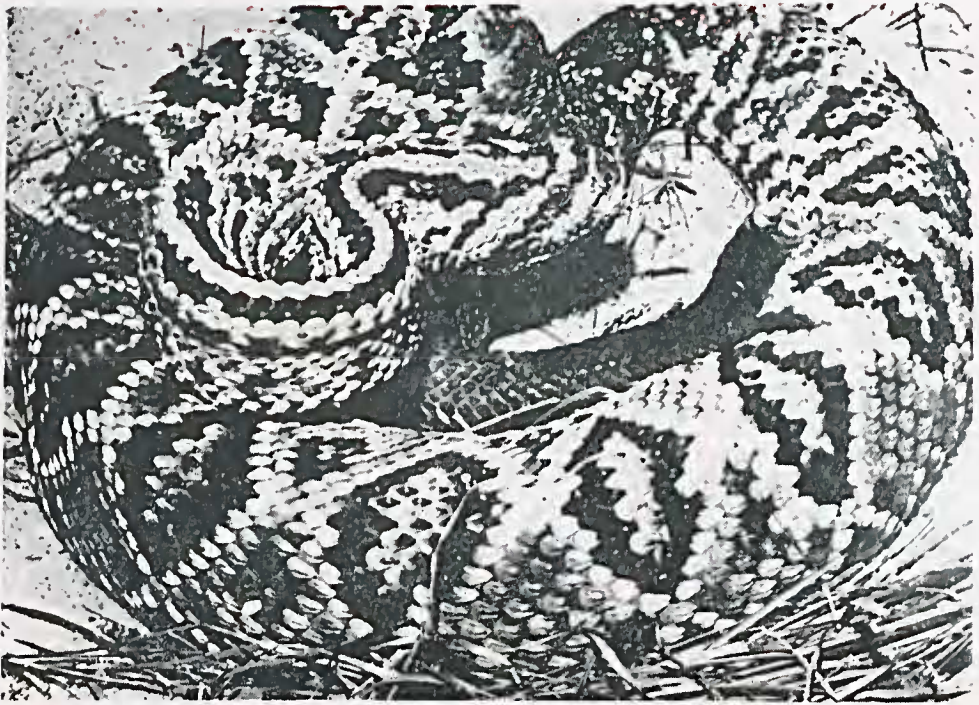


Fig. 1 — The holotype (RS 907 HSH/RSS), an adult female *Crotalus durissus trigonicus* from the Rupununi Savanna of southwestern Guyana.

Fig. 2 — A close-up of the head of the holotype (RS 907 HSH/RSS), an adult female *Crotalus durissus trigonicus* from the Rupununi Savanna of southwestern Guyana.

The scale rows are 29-31-21. The dorsal scales are strongly keeled, especially anteriorly; the first lateral row is smooth. There are 11 scale rows at the center of the tail.

The head is more oval than triangular, and the snout is blunt. The rostral is triangular and is slightly higher than wide; it is bordered by six scales, a supralabial, a prenasal, and an internasal on each side. The scales on top of the head, anterior to the supraoculars, comprise of a pair of triangular internasals, and a pair of larger prefrontals. The frontal area is occupied anteriorly by a pair of scales contacting medianly; posterior to these are five scales (2 pairs containing a scale in the center) which are bordered posteriorly by a crescent — shaped scale on each side that curves around behind the supraocular. Directly behind the frontal region are a number of irregular scales; the remaining head scales are fairly regular, and are conspicuously redged and imbricate.

The nasals are divided; the anterior is larger, and the posterior contains the nostril. There are two loreals on each side, the upper is interposed between the upper preocular and the prefrontal. The supraoculars are of normal size and jut out slightly over the eyes. There are two preoculars (the upper is larger), the lower being divided posteriorly; 2 suboculars and 3 postoculars on the right side, while there are 1 subocular and 2 postoculars on the left side. There are four scales between the supralabials and the orbit. The supralabials are 14/14 with only the first and fourth enlarged; the infralabials are 16/16, the first pair divided; the first three on either side contact the genials. The mental is triangular; there is one pair of genials contacting medianly.

There are 178 ventrals and 23 subcaudals. The anal is entire. The rattle string is incomplete but comprises of 7 equal width segments. The width of the proximal rattle is 13.47 mm.

Dorsally, the ground color in life was olive greenish with dorsal diamonds of which the centers were the same color. The ground color centers were bordered by dark brown to black of about one to two scale widths, which in turn was bordered by a scale row of scales of which at least half was white or ivory in color, distinctly setting off the light centered diamonds. There are twenty diamonds on the body which fade out posteriorly. There are two darker bands on the tail, and at least one-half of the tail (posterior) is black. The white — tipped scales which border the dorsal diamonds continue laterally to border the dark lateral (paraventral) blotch (sometimes with a ground color center) as well. There are numerous black — tipped scales between the diamonds laterally as well as within the light diamond centers. The ventral is immaculate anteriorly with some blotching on the edges of the ventrals at the first scale row, becoming more dense across the ventrals posteriorly. Ventral surface of the tail is darker than the ventral surface of the body and becomes jet black posteriorly.

Variation in the Paratypes. — The paratypes basically agree well with the holotype and are described as follows: Body stout. Head length is contained about 22 times in total length. Ratio of tail length to total length about 0.098 in males, and 0.077 in females (Allen and Neill, 1957, give 0.104 and 0.070, respectively; the specimens being preserved so long prior to my measurements may account for the difference).

The head is more oval than triangular and the snout blunt. The rostral is triangular, almost as wide as high, and is bordered by a pair of supralabials, prenasals and internasals. The scales on top of the head, anterior to the supraoculars,



include a pair of triangular internasals and a pair of larger prefrontals. The frontal area is occupied anteriorly by a pair of scales in contact medianly. Posterior to these the number of scales in this region varies from about 4 to 6. These border on each side a more or less crescent — shaped scale at the posterior end of the supraoculars. The remaining head scales are more or less regular and are conspicuously ridged and imbricate.

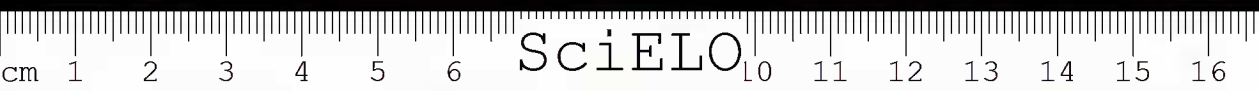
The nasals are divided, the anterior larger; the posterior containing the nostril. There are two loreals on each side. Supraoculars normal, slightly jutting over eyes. There are two preoculars, two suboculars, and two or three postoculars. There are four rows of scales between the supralabials and orbit. Supralabials 12 to 15; infralabials 14 to 17, first pair divided. Mental is triangular and one pair of genials in contact medianly. Ventrals vary from 170-172 in males, and 177 — 178 in females. Subcaudals 29-31 in males, and 21-23 in females. Scale rows 29-29-21, 29-31-21 or 29-29-20.

The rattle segments in three of the four paratypes indicate by equal segment size in the segments nearest the proximal rattle that sexual maturity has been attained. Total lengths of these specimens vary between 680 and 923 mm (2 males and 1 female). Allen and Neill (1957) indicate that in two other females measuring 949 and 1031 mm, the rattle segments become progressively larger toward the proximal rattle indicating that maturity had not been reached. It must be remembered that the holotype is a 1157 mm female that had reached maturity, and is the largest *C. d. trigonicus* known to date. This subspecies is larger than *C. d. ruruima*, but still on an average smaller than the other *C. durissus* subspecies.

Discussion. — *Crotalus durissus trigonicus* is intermediate in many characters between *C. d. dryinus* and *C. d. ruruima* which in order show a cline toward *Crotalus vegrandis*. Apparently, *C. vegrandis* has been ecologically isolated sufficient time for complete differentiation to the specific level. Both *C. d. trigonicus* and *C. d. ruruima* may no longer intergrade due to dwarfism and ecological isolation, and may actually be full species. This decision must await a thorough study when more material is available from these areas as well as the intervening areas between the forms here recognized.

Crotalus durissus trigonicus can be separated from *C. d. durissus*, *C. d. culminatus*, *C. d. totonacus*, *C. d. tzabcan*, *C. d. cumanensis*, *C. d. dryinus*, *C. d. marajoensis*, *C. d. cascavella* and *C. d. collilineatus* by the white — tipped scales bordering the dorsal diamonds and the triangular light mark on the supraoculars. It can be separated from *C. d. terrificus* by the strongly contrasting pattern of dark blotches on a light background and again the triangular light mark on the supraoculars. From *C. d. ruruima* by the presence of this same triangular shaped light mark on the supraoculars. Occasional specimens of *C. d. dryinus*, especially those from more inland localities, may also show the triangular light marks on the supraoculars, but they do not have the white — tipped scales bordering the body diamonds as in *C. d. trigonicus*. A specimen of *Crotalus d. dryinus* examined (RS 986 HSH/RSS) supposedly collected near Georgetown, Guyana is the only one we have seen with a triangular light mark on each supraocular, but its body pattern shows no white — tipped scales even remotely resembling *C. d. trigonicus*.

Allen and Neill (1957) point out that in the Rupununi Savannas the Macusí Indians claim that there are two kinds of rattlesnakes in the area, a "savanna



rattlesnake”, and a large “bush rattlesnake”. The “bush rattlesnake” collected by them was collected in thickly wooded country bordering the savanna at Karanambu. Apparently the “savanna rattlesnake” and the “bush rattlesnake” are ecologically separated. Many records exist of “*Crotalus durissus terrificus*” from isolated savannas in Brazil and Venezuela, but taxonomic assignment of these specimens must await additional material before we can include them in the taxonomic pattern now emerging.

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RESUMO: Uma subespécie nova de *Crotalus durissus* é descrita da Savanna de Rupununi no sudoeste da Guyana. Distingue-se de todas as outras subespécies de *Crotalus durissus* pela presença de uma marca, clara triangular, bem distinta em cada supraocular, e por ter as marcas romboidais do corpo orladas por escamas com ponta branca. A sua posição taxonômica como possível espécie é discutida.

UNITERMOS: *Crotalus durissus trigonicus* subesp. nov. (*); *Crotalus durissus cumanaensis* Humbold and Bonpland; *Crotalus durissus cascavella* Wagler; *Crotalus durissus terrificus* (Laurenti); *Crotalus durissus marajoensis* Hoge; *Crotalus durissus ruruima* Hoge (*); *Crotalus unicolor* Van Lidth de Jeude *Crotalus durissus collilineatus* Amaral; *Crotalus durissus dryinus* (Linnaeus).(*)

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